

## CHAPTER 517. DISPOSAL OF COAL COMBUSTION RESIDUALS FROM ELECTRIC UTILITIES

### SUBCHAPTER 1. GENERAL PROVISIONS

#### 252:517-1-3. Definitions

The following words or terms, when used in this Chapter, shall have the following meaning, unless the context clearly indicates otherwise. Any term not defined in this Chapter shall be defined as set forth in OAC 252:517-1-4.

**"Acre foot"** means the volume of one acre of surface area to a depth of one foot.

**"Active facility"** or **"active electric utilities"** or **"independent power producers"** means any facility subject to the requirements of this Chapter in operation on October 19, 2015. An electric utility or independent power producer is in operation if it is generating electricity that is provided to electric power transmission systems or to electric power distribution systems on or after October 19, 2015. An off-site CCR unit is in operation if it is accepting or managing CCR on or after October 19, 2015.

**"Active life"** or **"in operation"** means the period of operation beginning with the initial placement of CCR in the CCR unit and ending at completion of closure activities in accordance with OAC 252:517-15-7.

**"Active portion"** means that part of the CCR unit that has received or is receiving CCR or non-CCR waste and that has not completed closure in accordance with OAC 252:517-15-7.

**"Aquifer"** means a geologic formation, group of formations, or portion of a formation capable of yielding usable quantities of groundwater to wells or springs.

**"Area-capacity curves"** means graphic curves which readily show the reservoir water surface area, in acres, at different elevations from the bottom of the reservoir to the maximum water surface, and the capacity or volume, in acre-feet, of the water contained in the reservoir at various elevations.

**"Areas susceptible to mass movement"** means those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where, because of natural or human-induced events, the movement of earthen material at, beneath, or adjacent to the CCR unit results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluctuation, block sliding, and rock fall.

**"Beneficial use of CCR"** means the CCR meet all of the following conditions:

- (A) The CCR must provide a functional benefit;
- (B) The CCR must substitute for the use of a virgin material, conserving natural resources that would otherwise need to be obtained through practices, such as extraction;
- (C) The use of the CCR must meet relevant product specifications, regulatory standards or design standards when available, and when such standards are not available, the CCR is not used in excess quantities; and
- (D) When unencapsulated use of CCR involving placement on the land of 12,400 tons or more in non-roadway applications, the user must demonstrate and keep records, and provide such documentation upon request, that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human

and ecological receptors during use.

**"CLIMOCS"** means the following publication of the Oklahoma Climatological Survey: Shafer, Mark A., CLIMOCS: A Climatological Summary of 168 Oklahoma Cooperative Stations, Oklahoma Climatological Survey, February 1993, 184 pp.

**"Closed"** means placement of CCR in a CCR unit has ceased, and the owner or operator has completed closure of the CCR unit in accordance with OAC 252:517-15-7 and has initiated post-closure care in accordance with OAC 252:517-15-9.

**"Coal combustion residuals (CCR)"** means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

**"CCR fugitive dust"** means solid airborne particulate matter that contains or is derived from CCR, emitted from any source other than a stack or chimney.

**"CCR landfill" or "landfill"** means an area of land or an excavation that receives CCR and which is not a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave. For purposes of this Chapter, a CCR landfill also includes sand and gravel pits and quarries that receive CCR, CCR piles, and any practice that does not meet the definition of a beneficial use of CCR.

**"CCR pile" or "pile"** means any non-containerized accumulation of solid, non-flowing CCR that is placed on the land. CCR that is beneficially used off-site is not a CCR pile.

**"CCR surface impoundment" or "impoundment"** means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR.

**"CCR unit"** means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified.

**"Dike"** means an embankment, berm, or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

**"Displacement"** means the relative movement of any two sides of a fault measured in any direction.

**"Disposal"** means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste as defined in Section 27A O.S. § 2-10-103 into or on any land or water so that such solid waste, or constituent thereof, may enter the environment or be emitted into the air or discharged into any waters, including groundwaters. For purposes of this Chapter, disposal does not include the storage or the beneficial use of CCR.

**"Downstream toe"** means the junction of the downstream slope or face of the CCR surface impoundment with the ground surface.

**"Encapsulated beneficial use"** means a beneficial use of CCR that binds the CCR into a solid matrix that minimizes its mobilization into the surrounding environment.

**"Existing CCR landfill"** means a CCR landfill that receives CCR both before and after October 19, 2015, or for which construction commenced prior to October 19, 2015 and receives CCR on or after October 19, 2015. A CCR landfill has commenced construction if the owner or operator has obtained the federal, state, and local approvals or permits necessary to begin physical construction and a continuous on-site, physical construction program had begun prior to October 19, 2015.

**"Existing CCR surface impoundment"** means a CCR surface impoundment that receives

CCR both before and after October 19, 2015, or for which construction commenced prior to October 19, 2015 and receives CCR on or after October 19, 2015. A CCR surface impoundment has commenced construction if the owner or operator has obtained the federal, state, and local approvals or permits necessary to begin physical construction and a continuous on-site, physical construction program had begun prior to October 19, 2015.

**"Facility"** means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, disposing, or otherwise conducting solid waste management of CCR. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them).

**"Factor of safety (Safety factor)"** means the ratio of the forces tending to resist the failure of a structure to the forces tending to cause such failure as determined by accepted engineering practice.

**"Fault"** means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.

**"Flood hydrograph"** means a graph showing, for a given point on a stream, the discharge, height, or other characteristic of a flood as a function of time.

**"Freeboard"** means the vertical distance between the lowest point on the crest of the impoundment dike and the surface of the waste contained therein.

**"Free liquids"** means liquids that readily separate from the solid portion of a waste under ambient temperature and pressure.

**"Groundwater"** means water below the land surface in a zone of saturation.

**"Hazard potential classification"** means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of the diked CCR surface impoundment or mis-operation of the diked CCR surface impoundment or its appurtenances. The hazardous potential classifications include high hazard potential CCR surface impoundment, significant hazard potential CCR surface impoundment, and low hazard potential CCR surface impoundment, which terms mean:

(A) High hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.

(B) Low hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.

(C) Significant hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.

**"Height"** means the vertical measurement from the downstream toe of the CCR surface impoundment at its lowest point to the lowest elevation of the crest of the CCR surface impoundment.

**"Holocene"** means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch, at 11,700 years before present, to present.

**"Hydraulic conductivity"** means the rate at which water can move through a permeable medium (i.e., the coefficient of permeability).

**"Inactive CCR surface impoundment"** means a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after

October 19, 2015.

**"Incised CCR surface impoundment"** means a CCR surface impoundment which is constructed by excavating entirely below the natural ground surface, holds an accumulation of CCR entirely below the adjacent natural ground surface, and does not consist of any constructed diked portion.

**"Inflow design flood"** means the flood hydrograph that is used in the design or modification of the CCR surface impoundments and its appurtenant works.

**"In operation"** means the same as active life.

**"Karst terrain"** means an area where karst topography, with its characteristic erosional surface and subterranean features, is developed as the result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include, but are not limited to, dolines, collapse shafts (sinkholes), sinking streams, caves, seeps, large springs, and blind valleys.

**"Lateral expansion"** means a horizontal expansion of the waste boundaries of an existing CCR landfill or existing CCR surface impoundment made after October 19, 2015.

**"Liquefaction factor of safety"** means the factor of safety (safety factor) determined using analysis under liquefaction conditions.

**"Lithified earth material"** means all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith lying at or near the earth surface.

**"Maximum horizontal acceleration in lithified earth material"** means the maximum expected horizontal acceleration at the ground surface as depicted on a seismic hazard map, with a 98% or greater probability that the acceleration will not be exceeded in 50 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.

**"New CCR landfill"** means a CCR landfill or lateral expansion of a CCR landfill that first receives CCR or commences construction after October 19, 2015. A new CCR landfill has commenced construction if the owner or operator has obtained permits necessary to begin physical construction and a continuous on-site, physical construction program had begun after October 19, 2015. Overfills are also considered new CCR landfills.

**"New CCR surface impoundment"** means a CCR surface impoundment or lateral expansion of an existing or new CCR surface impoundment that first receives CCR or commences construction after October 19, 2015. A new CCR surface impoundment has commenced construction if the owner or operator has obtained the permits necessary to begin physical construction and a continuous on-site, physical construction program had begun after October 19, 2015.

**"Operator"** means the person(s) responsible for the overall operation of a CCR unit.

**"Overfill"** means a new CCR landfill constructed over a closed CCR surface impoundment.

**"Owner"** means the person(s) who owns a CCR unit or part of a CCR unit.

**"Permit boundary"** means the outermost edge of the area described by legal description in the owner/operator's permit. The permitted boundary includes the area in the buffer zone.

**"Poor foundation conditions"** mean those areas where features exist which indicate that a natural or human-induced event may result in inadequate foundation support for the structural components of an existing or new CCR unit. For example, failure to maintain static and seismic factors of safety as required in OAC 252:517-11-4(e) and OAC 252:517-11-5(e) would cause a

poor foundation condition.

**"Probable maximum flood"** means the flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the drainage basin.

**"Qualified person"** means a person or persons trained to recognize specific appearances of structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit by visual observation and, if applicable, to monitor instrumentation.

**"Qualified professional engineer"** means an individual who is licensed as a Professional Engineer in the state of Oklahoma by the State Board of Registration for Professional Engineers and Land Surveyors.

**"Recognized and generally accepted good engineering practices"** means engineering maintenance or operation activities based on established codes, widely accepted standards, published technical reports, or a practice widely recommended throughout the industry. Such practices generally detail approved ways to perform specific engineering, inspection, or mechanical integrity activities.

**"Representative sample"** means a sample of a universe or whole (e.g., waste pile, lagoon, and groundwater) which can be expected to exhibit the average properties of the universe or whole. See EPA publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Chapter 9.

**"Retrofit"** means to remove all CCR and contaminated soils and sediments from the CCR surface impoundment, and to ensure the unit complies with the requirements in OAC 252:517-11-3.

**"Run-off"** means any rainwater, leachate, or other liquid that drains over land from any part of a CCR landfill or lateral expansion of a CCR landfill.

**"Run-on"** means any rainwater, leachate, or other liquid that drains over land onto any part of a CCR landfill or lateral expansion of a CCR landfill.

**"Sand and gravel pit or quarry"** means an excavation for the extraction of aggregate, minerals or metals. The term sand and gravel pit and/or quarry does not include subsurface or surface coal mines.

**"Seismic factor of safety"** means the factor of safety (safety factor) determined using analysis under earthquake conditions using the peak ground acceleration for a seismic event with a 2% probability of exceedance in 50 years, equivalent to a return period of approximately 2,500 years, based on the U.S. Geological Survey (USGS) seismic hazard maps for seismic events with this return period for the region where the CCR surface impoundment is located.

**"Seismic impact zone"** means an area having a 2% or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10 g in 50 years.

**"Slope protection"** means engineered or non-engineered measures installed on the upstream or downstream slope of the CCR surface impoundment to protect the slope against wave action or erosion, including but not limited to rock riprap, wooden pile, or concrete revetments, vegetated wave berms, concrete facing, gabions, geotextiles, or fascines.

**"Solid waste management or management"** means the systematic administration of the activities which provide for the collection, source separation, storage, transportation, processing, treatment, or disposal of solid waste.

**"State Director"** means the Executive Director of the DEQ or designee.

**"Static factor of safety"** means the factor of safety (safety factor) determined using analysis under the long-term, maximum storage pool loading condition, the maximum surcharge pool loading condition, and under the end-of-construction loading condition.

**"Structural components"** mean liners, leachate collection and removal systems, final covers, run-on and run-off systems, inflow design flood control systems, and any other component used in the construction and operation of the CCR unit that is necessary to ensure the integrity of the unit and that the contents of the unit are not released into the environment.

**"Unstable area"** means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.

**"Uppermost aquifer"** means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary. Upper limit is measured at a point nearest to the natural ground surface to which the aquifer rises during the wet season.

**"Waste boundary"** means a vertical surface located at the hydraulically downgradient limit of the CCR unit. The vertical surface extends down into the uppermost aquifer.

**"Wetlands"** means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

## **SUBCHAPTER 9. GROUNDWATER MONITORING/CORRECTIVE ACTION**

### **252:517-9-4. Groundwater sampling and analysis requirements**

(a) **DEQ approval required.** A groundwater monitoring program shall be established and a plan submitted to the DEQ for approval. The plan must include information required by (b) through (j) of this Section.

(b) **Sampling and analysis procedures.** The groundwater monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of groundwater quality at the background and downgradient wells required by OAC 252-517-9-2. The owner or operator of the CCR unit must develop a sampling and analysis program that includes procedures and techniques for:

- (1) Sample collection;
- (2) Sample preservation and shipment;
- (3) Analytical procedures;
- (4) Chain of custody control; and
- (5) Quality assurance and quality control.

(c) **Sampling and analytical methods.** The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples. For purposes of OAC 252:517-9-1 through OAC 252:517-9-9, the term constituent refers to both hazardous constituents and other monitoring parameters listed in either Appendix A or B of this Chapter.

(d) **Groundwater elevation.** Groundwater elevations must be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator of the

CCR unit must determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same CCR management area must be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction.

(e) **Establish background.** The owner or operator of the CCR unit must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the constituents required in the particular groundwater monitoring program that applies to the CCR unit as determined under OAC 252:517-9-5(a) or OAC 252:517-9-6(a). Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR unit if it meets the requirements of OAC 252-517-9-2(a)(1).

(f) **Number of samples.** The number of samples collected when conducting detection monitoring and assessment monitoring (for both downgradient and background wells) must be consistent with the statistical procedures chosen under paragraph (fg) of this Section and the performance standards under paragraph (gh) of this Section. The sampling procedures shall be those specified under OAC 252:517-9-5(b) through (d) for detection monitoring, OAC 252:517-9-6(b) through (d) for assessment monitoring, and OAC 252:517-9-7(b) for corrective action.

(g) **Statistical method.** The owner or operator of the CCR unit must select one of the statistical methods specified in paragraphs (g)(1) through (5) of this Section to be used in evaluating groundwater monitoring data for each specified constituent. The statistical test chosen shall be conducted separately for each constituent in each monitoring well.

(1) A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) A tolerance or prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of paragraph (fh) of this Section.

(6) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area. The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data.

(h) **Statistical method performance standard.** Any statistical method chosen under paragraph (g) of this Section shall comply with the following performance standards, as appropriate, based on the statistical test method used:

(1) The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of constituents. Normal distributions of data values shall use parametric methods. Non-normal distributions shall use non-parametric methods. If the distribution of the constituents is shown by the owner or operator of the CCR unit to be inappropriate for a

normal theory test, then the data must be transformed or a distribution-free (non-parametric) theory test must be used. If the distributions for the constituents differ, more than one statistical method may be needed.

(2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.

(3) If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values shall be such that this approach is at least as effective as any other approach in this Section for evaluating groundwater data. The parameter values shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(4) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be such that this approach is at least as effective as any other approach in this Section for evaluating groundwater data. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(5) The statistical method must account for data below the limit of detection with one or more statistical procedures that shall be at least as effective as any other approach in this Section for evaluating groundwater data. Any practical quantitation limit that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(6) If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) **Statistically significant increase.** The owner or operator of the CCR unit must determine whether or not there is a statistically significant increase over background values for each constituent required in the particular groundwater monitoring program that applies to the CCR unit, as determined under OAC 252:517-9-5(a) or OAC 252:517-9-6(a).

(1) In determining whether a statistically significant increase has occurred, the owner or operator must compare the groundwater quality of each constituent at each monitoring well designated pursuant to OAC 252-517-9-2(a)(2) or (d)(1) to the background value of that constituent, according to the statistical procedures and performance standards specified under paragraphs (f) and (g) of this Section.

(2) Within 90 days after completing sampling and analysis, the owner or operator must determine whether there has been a statistically significant increase over background for any constituent at each monitoring well.

(j) **Filtering prohibition.** The owner or operator must measure "total recoverable metals" concentrations in measuring groundwater quality. Measurement of total recoverable metals captures both the particulate fraction and dissolved fraction of metals in natural waters. Groundwater samples shall not be field- filtered prior to analysis.



(k) **Recordkeeping.** The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in OAC 252:517-19-1(h), the notification requirements specified in OAC 252:517-19-2(h), and the Internet requirements specified in OAC 252:517-19-3(h).

## **SUBCHAPTER 11. DESIGN CRITERIA**

### **252:517-11-1. Design criteria for new CCR landfills and any lateral expansion of a CCR landfill**

#### **(a) Applicability.**

(1) New CCR landfills and any lateral expansion of a CCR landfill must be designed, constructed, operated, and maintained with either a composite liner that meets the requirements of paragraph (b) of this Section or an alternative composite liner that meets the requirements in paragraph (c) of this Section, and a leachate collection and removal system that meets the requirements of paragraph (d) of this Section.

(2) Prior to construction of an overfill the underlying surface impoundment must meet the requirements of OAC 252:517-15-7(d).

**(b) Liner components.** A composite liner must consist of two components; the upper component consisting of, at a minimum, a 30-mil geomembrane liner (GM), and the lower component consisting of at least a two foot layer of compacted soil with a hydraulic conductivity of no more than  $1 \times 10^{-7}$  centimeters per second (cm/sec). GM components consisting of high density polyethylene (HDPE) must be at least 60-mil thick. The GM or upper liner component must be installed in direct and uniform contact with the compacted soil or lower liner component. The composite liner must be:

(1) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the CCR or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(2) Constructed of materials that provide appropriate shear resistance of the upper and lower component interface to prevent sliding of the upper component including on slopes;

(3) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(4) Installed to cover all surrounding earth likely to be in contact with the CCR or leachate.

**(c) Alternative composite liner.** If the owner or operator elects to install an alternative composite liner, all of the following requirements must be met:

(1) An alternative composite liner must consist of two components; the upper component consisting of, at a minimum, a 30-mil GM, and a lower component, that is not a geomembrane, with a liquid flow rate no greater than the liquid flow rate of two feet of compacted soil with a hydraulic conductivity of no more than  $1 \times 10^{-7}$  cm/sec. GM components consisting of high density polyethylene (HDPE) must be at least 60-mil thick. If the lower component of the alternative liner is compacted soil, the GM must be installed in direct and uniform contact with the compacted soil.

(2) The owner or operator must obtain certification from a qualified professional engineer that the liquid flow rate through the lower component of the alternative composite liner is no greater than the liquid flow rate through two feet of compacted soil with a hydraulic

conductivity of  $1 \times 10^{-7}$  cm/ sec. The hydraulic conductivity for the two feet of compacted soil used in the comparison shall be no greater than  $1 \times 10^{-7}$  cm/sec. The hydraulic conductivity of any alternative to the two feet of compacted soil must be determined using recognized and generally accepted methods. The liquid flow rate comparison must be made using Equation 1 of this Section,  $Q \div A = q = k((h \div t) + 1)$ , which is derived from Darcy's Law for gravity flow through porous media. Where, Q = flow rate (cubic centimeters/second); A = surface area of the liner (squared centimeters); q = flow rate per unit area (cubic centimeters/second/squared centimeter); k = hydraulic conductivity of the liner (centimeters/second); h = hydraulic head above the liner (centimeters); and t = thickness of the liner (centimeters).

(3) The alternative composite liner must meet the requirements specified in paragraphs (b)(1) through (4) of this Section.

(d) **Leachate collection system.** The leachate collection and removal system must be designed, constructed, operated, and maintained to collect and remove leachate from the landfill during the active life and post-closure care period. The leachate collection and removal system must be:

- (1) Designed and operated to maintain less than a 30-centimeter depth of leachate over the composite liner or alternative composite liner;
- (2) Constructed of materials that are chemically resistant to the CCR and any non-CCR waste managed in the CCR unit and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying waste, waste cover materials, and equipment used at the CCR unit; and
- (3) Designed and operated to minimize clogging during the active life and post-closure care period.

(e) **Pre-construction requirements.** Prior to construction of the CCR landfill or any lateral expansion of a CCR landfill, the owner or operator must:

- (1) Obtain a certification from a qualified professional engineer that the design of the composite liner (or, if applicable, alternative composite liner) and leachate collection and removal system meets the requirements of this Section, and submit the certification along with design plans to DEQ for approval.
- (2) Submit a Quality Assurance/Quality Control (QA/QC) plan to DEQ for review and approval, to demonstrate the liner system will be installed in accordance with this Subchapter and the approved design plans. The plan shall include all information required for the applicable liner design, placement, construction, and testing, and describe how independent, third-party, QA and QC will be conducted during all phases of construction of the liner.
- (3) Obtain written approval from DEQ to construct.
- (4) Provide written notification of construction. The DEQ shall be notified at least two weeks before liner construction begins. The notification shall:
  - (A) define the area to be constructed; and
  - (B) include the names of the contractors and third party QA and QC officials.
- (5) A pre-construction meeting shall be held at the facility with the design engineer and QA and QC officials before liner construction begins. The DEQ shall be notified at least 48 hours in advance of the meeting.

(f) **LIT report.** Upon completion of construction of the CCR landfill or any lateral expansion of a CCR landfill, the owner or operator must obtain a certification from a qualified professional engineer that the composite liner (or, if applicable, alternative composite liner) and the leachate collection and removal system has been constructed in accordance with the requirements of this Section. The certification shall be submitted to the DEQ for review and approval as part of a

Liner Installation and Testing (LIT) report. The LIT report shall include:

- (1) summaries of all construction activities;
- (2) testing data sheets and summaries;
- (3) changes from design and material specifications; and
- (4) all QA/QC documentation.

(g) **DEQ inspection required.** Waste shall not be placed on a new liner system until the DEQ inspects the liner system and provides written authorization to commence disposal.

(h) **Recordkeeping.** The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in OAC 252:517-19-1(f), the notification requirements specified in OAC 252:517-19-2(f), and the Internet requirements specified in OAC 252:517-19-3(f).

### **SUBCHAPTER 13. OPERATIONAL REQUIREMENTS**

#### **252:517-13-4. Inspection requirements for CCR surface impoundments**

(a) **Inspections by a qualified person.**

(1) **Inspection intervals.** All CCR surface impoundments and any lateral expansion of a CCR surface impoundment must be examined by a qualified person as follows:

- (A) At intervals not exceeding seven days, inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit;
  - (B) At intervals not exceeding seven days, inspect the discharge of all outlets of hydraulic structures which pass underneath the base of the surface impoundment or through the dike of the CCR unit for abnormal discoloration, flow or discharge of debris or sediment; and
  - (C) At intervals not exceeding 30 days, monitor all CCR unit instrumentation.
- (D) The results of the inspection by a qualified person must be recorded in the facility's operating record as required by OAC 252:517-19-1(g)(5).

(2) **Timeframes for inspections by a qualified person.**

- (A) **Existing CCR surface impoundments.** The owner or operator of the CCR unit must have initiated the inspections required under paragraph (a) of this Section no later than October 19, 2015.
- (B) **New CCR surface impoundments and any lateral expansion of a CCR surface impoundment.** The owner or operator of the CCR unit must initiate the inspections required under paragraph (a) of this Section upon initial receipt of CCR by the CCR unit.

(b) **Annual inspections by a qualified professional engineer.**

(1) **Inspection requirements.** If the existing or new CCR surface impoundment or any lateral expansion of the CCR surface impoundment is subject to the periodic structural stability assessment requirements under OAC 252:517-11-4(d) or OAC 252:517-11-5(d), the CCR unit must additionally be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:

- (A) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by OAC 252:517-11-4(c)(1) and OAC

252:517-11-5(c)(1), previous periodic structural stability assessments required under OAC 252:517-11-4(d) and OAC 252:517-11-5(d), the results of inspections by a qualified person, and results of previous annual inspections);

(B) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures; and

(C) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

(2) **Inspection report.** The qualified professional engineer must prepare a report following each inspection that addresses the following:

(A) Any changes in geometry of the impounding structure since the previous annual inspection;

(B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;

(C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;

(D) The storage capacity of the impounding structure at the time of the inspection;

(E) The approximate volume of the impounded water and CCR at the time of the inspection;

(F) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures; and

(G) Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

(3) **Timeframes for conducting the initial inspection.**

(A) **Existing CCR surface impoundments.** The owner or operator of the CCR unit must have completed the initial inspection required by paragraphs (b)(1) and (2) of this Section no later than January 19, 2016.

(B) **New CCR surface impoundments and any lateral expansion of a CCR surface impoundment.** The owner or operator of the CCR unit must complete the initial annual inspection required by paragraphs (b)(1) and (2) of this Section is completed no later than 14 months following the date of initial receipt of CCR in the CCR unit.

(4) **Frequency of inspections.**

(A) Except as provided for in paragraph (b)(4)(B) of this Section, the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this Section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this Section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by OAC 252:517-19-1(g)(6).

(B) In any calendar year in which both the periodic inspection by a qualified professional engineer and the quinquennial (occurring every five years) structural

stability assessment by a qualified professional engineer required by OAC 252:517-11-4(d) and OAC 252:517-11-5(d) are required to be completed, the annual inspection is not required, provided the structural stability assessment is completed during the calendar year. If the annual inspection is not conducted in a year as provided by this paragraph (b)(4)(B), the deadline for completing the next annual inspection is one year from the date of completing the quinquennial structural stability assessment.

(5) **Deficiency identified; corrective measures taken.** If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.

(6) **DEQ notification.** The DEQ shall be notified if a deficiency is identified in (5) above and provided documentation of corrective measures.

(c) **Recordkeeping.** The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in OAC 252:517-19-1(g), the notification requirements specified in OAC 252:517-19-2(g), and the internet requirements specified in OAC 252:517-19-3(g).

## **SUBCHAPTER 15. CLOSURE AND POST-CLOSURE CARE**

### **252:517-15-7. Criteria for conducting the closure or retrofit of CCR units**

(a) **Closure of CCR unit; retrofit of CCR surface impoundment.** Closure of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit, as described in paragraphs (b) through (j) of this Section. Retrofit of a CCR surface impoundment must be completed in accordance with the requirements in paragraph (k) of this Section.

(b) **Written closure plan.**

(1) **Content of the plan.** The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(A) through (F) of this Section.

(A) A narrative description of how the CCR unit will be closed in accordance with this Section.

(B) If closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this Section.

(C) If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this Section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this Section.

(D) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

(E) An estimate of the largest area of the CCR unit ever requiring a final cover as

required by paragraph (d) of this Section at any time during the CCR unit's active life.

(F) A schedule for completing all activities necessary to satisfy the closure criteria in this Section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the timeframes specified in paragraph (f)(1) of this Section, the written closure plan must include the site-specific information, factors and considerations that would support any time extension sought under paragraph (f)(2) of this Section.

**(2) Timeframes for preparing the initial written closure plan.**

(A) Existing CCR landfills and existing CCR surface impoundments. No later than October 17, 2016, the owner or operator of the CCR unit must prepare an initial written closure plan consistent with the requirements specified in paragraph (b)(1) of this Section.

(B) New CCR landfills and new CCR surface impoundments, and any lateral expansion of a CCR unit. No later than the date of the initial receipt of CCR in the CCR unit, the owner or operator must prepare an initial written closure plan consistent with the requirements specified in paragraph (b)(1) of this Section.

(C) The owner or operator has completed the written closure plan when the plan, including the certification required by paragraph (b)(4) of this Section, has been placed in the facility's operating record as required by OAC 252:517-19-1(i)(4).

**(3) Amendment of a written closure plan.**

(A) The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b)(1) of this Section at any time.

(B) The owner or operator must amend the written closure plan whenever:

(i) There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or

(ii) Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan;

(C) The owner or operator must amend the closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. If a written closure plan is revised after closure activities have commenced for a CCR unit, the owner or operator must amend the current closure plan no later than 30 days following the triggering event.

**(4) PE certification.** The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this Section.

**(5) DEQ approval required.** The owner or operator of the CCR unit must submit the initial closure plan and any amendment of the closure plan to the DEQ for approval.

**(c) Closure by removal of CCR.** An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal

and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to OAC 252:517-9-6(h) for constituents listed in Appendix B to this Chapter.

**(d) Closure performance standard when leaving CCR in place.**

**(1) Closure standards.** The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:

- (A) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated runoff to the ground or surface waters or to the atmosphere;
- (B) Preclude the probability of future impoundment of water, sediment, or slurry;
- (C) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
- (D) Minimize the need for further maintenance of the CCR unit; and
- (E) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

**(2) Drainage and stabilization of CCR surface impoundments.** The owner or operator of a CCR surface impoundment or any lateral expansion of a CCR surface impoundment must meet the requirements of paragraphs (d)(2)(A) and (B) of this Section prior to installing the final cover system required under paragraph (d)(3) of this Section.

(A) Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues.

(B) Remaining wastes must be stabilized sufficient to support the final cover system.

**(3) Final cover system.** If a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (d)(3)(A) of this Section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(B) of this Section.

(A) The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(A)(i) through (iv) of this Section. The design of the final cover system must be included in the written closure plan required by paragraph (b) of this Section.

(i) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  cm/sec, whichever is less.

(ii) The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.

(iii) The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

(iv) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

(B) The owner or operator may select an alternative final cover system design, provided the alternative final cover system is designed and constructed to meet the criteria in paragraphs (d)(3)(B)(i) through (iv) of this Section. The design of the final cover system must be included in the written closure plan required by paragraph (b) of this Section.

- (i) The design of the final cover system must include an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in paragraphs (d)(3)(A)(i) and (ii) of this Section.
  - (ii) The design of the final cover system must include an erosion layer that provides equivalent protection from wind or water erosion as the erosion layer specified in paragraph (d)(3)(A)(iii) of this Section.
  - (iii) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.
- (C) The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the design of the final cover system meets the requirements of this Section.
- (e) **Initiation of closure activities.** Except as provided for in paragraph (e)(4) of this Section and OAC 252:517-15-8, the owner or operator of a CCR unit must commence closure of the CCR unit no later than the applicable timeframes specified in either paragraph (e)(1) or (2) of this Section.
  - (1) **Commencing closure.** The owner or operator must commence closure of the CCR unit no later than 30 days after the date on which the CCR unit either:
    - (A) Receives the known final receipt of waste, either CCR or any non-CCR waste stream; or
    - (B) Removes the known final volume of CCR from the CCR unit for the purpose of beneficial use of CCR.
  - (2) **Conditions.**
    - (A) Except as provided by paragraph (e)(2)(B) of this Section, the owner or operator must commence closure of a CCR unit that has not received CCR or any non-CCR waste stream or is no longer removing CCR for the purpose of beneficial use within two years of the last receipt of waste or within two years of the last removal of CCR material for the purpose of beneficial use.
    - (B) Notwithstanding paragraph (e)(2)(A) of this Section, the owner or operator of the CCR unit may secure an additional two years to initiate closure of the idle unit provided the owner or operator provides written documentation that the CCR unit will continue to accept wastes or will start removing CCR for the purpose of beneficial use. The documentation must be supported by, at a minimum, the information specified in paragraphs (e)(2)(B)(i) and (ii) of this Section. The owner or operator may obtain two-year extensions provided the owner or operator continues to be able to demonstrate that there is reasonable likelihood that the CCR unit will accept wastes in the foreseeable future or will remove CCR from the unit for the purpose of beneficial use. The owner or operator must place each completed demonstration, if more than one time extension is sought, in the facility's operating record as required by OAC 252:517-19-1(i)(5) prior to the end of any two-year period.
      - (i) Information documenting that the CCR unit has remaining storage or disposal capacity or that the CCR unit can have CCR removed for the purpose of beneficial use; and
      - (ii) Information demonstrating that there is a reasonable likelihood that the CCR unit will resume receiving CCR or non-CCR waste streams in the foreseeable future or that CCR can be removed for the purpose of beneficial use. The narrative must include a best estimate as to when the CCR unit will resume receiving CCR or non-



CCR waste streams. The situations listed in paragraphs (e)(2)(B)(ii)(I) through (IV) of this Section are examples of situations that would support a determination that the CCR unit will resume receiving CCR or non-CCR waste streams in the foreseeable future.

(I) Normal plant operations include periods during which the CCR unit does not receive CCR or non-CCR waste streams, such as the alternating use of two or more CCR units whereby at any point in time one CCR unit is receiving CCR while CCR is being removed from a second CCR unit after its dewatering.

(II) The CCR unit is dedicated to a coal-fired boiler unit that is temporarily idled (e.g., CCR is not being generated) and there is a reasonable likelihood that the coal-fired boiler will resume operations in the future.

(III) The CCR unit is dedicated to an operating coal-fired boiler (i.e., CCR is being generated); however, no CCR are being placed in the CCR unit because the CCR are being entirely diverted to beneficial uses, but there is a reasonable likelihood that the CCR unit will again be used in the foreseeable future.

(IV) The CCR unit currently receives only non-CCR waste streams and those non-CCR waste streams are not generated for an extended period of time, but there is a reasonable likelihood that the CCR unit will again receive non-CCR waste streams in the future.

(C) In order to obtain additional time extension(s) to initiate closure of a CCR unit beyond the two years provided by paragraph (e)(2)(A) of this Section, the owner or operator of the CCR unit must include with the demonstration required by paragraph (e)(2)(B) of this Section the following statement signed by the owner or operator or an authorized representative: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(3) **Commencement activities.** For purposes of this Chapter, closure of the CCR unit has commenced if the owner or operator has ceased placing waste and completes any of the following actions or activities:

(A) Taken any steps necessary to implement the written closure plan required by paragraph (b) of this Section; or

(B) Taken any steps necessary to comply with any standards that are a prerequisite, or are otherwise applicable, to initiating or completing the closure of a CCR unit.

(4) **Timeline exceptions.** The timeframes specified in paragraphs (e)(1) and (2) of this Section do not apply to any of the following owners or operators:

(A) An owner or operator of an existing unlined CCR surface impoundment closing the CCR unit as required by OAC 252:517-15-6(a);

(B) An owner or operator of an existing CCR surface impoundment closing the CCR unit as required by OAC 252:517-15-6(b);

(C) An owner or operator of a new CCR surface impoundment closing the CCR unit as required by OAC 252:517-15-6(c); or

(D) An owner or operator of an existing CCR landfill closing the CCR unit as required by OAC 252:517-15-6(d).

**(f) Completion of closure activities.**

**(1) Closure timeframes.** Except as provided for in paragraph (f)(2) of this Section, the owner or operator must complete closure of the CCR unit:

(A) For existing and new CCR landfills and any lateral expansion of a CCR landfill, within six months of commencing closure activities.

(B) For existing and new CCR surface impoundments and any lateral expansion of a CCR surface impoundment, within five years of commencing closure activities.

**(2) Extensions of closure timeframes.**

(A) **Applicability.** The timeframes for completing closure of a CCR unit specified under paragraphs (f)(1) of this Section may be extended if the owner or operator can demonstrate that it was not feasible to complete closure of the CCR unit within the required timeframes due to factors beyond the facility's control. If the owner or operator is seeking a time extension beyond the time specified in the written closure plan as required by paragraph (b)(1) of this Section, the demonstration must include a narrative discussion providing the basis for additional time beyond that specified in the closure plan. The owner or operator must place each completed demonstration, if more than one time extension is sought, in the facility's operating record as required by OAC 252:517-19-1(i)(6) prior to the end of any two-year period. Factors that may support such a demonstration include:

(i) Complications stemming from the climate and weather, such as unusual amounts of precipitation or a significantly shortened construction season;

(ii) Time required to dewater a surface impoundment due to the volume of CCR contained in the CCR unit or the characteristics of the CCR in the unit;

(iii) The geology and terrain surrounding the CCR unit will affect the amount of material needed to close the CCR unit; or

(iv) Time required or delays caused by the need to coordinate with and obtain necessary approvals and permits from a state or other agency.

**(B) Maximum time extensions.**

(i) CCR surface impoundments of 40 acres or smaller may extend the time to complete closure by no longer than two years.

(ii) CCR surface impoundments larger than 40 acres may extend the timeframe to complete closure of the CCR unit multiple times, in two-year increments. For each two-year extension sought, the owner or operator must substantiate the factual circumstances demonstrating the need for the extension. No more than a total of five two-year extensions may be obtained for any CCR surface impoundment.

(iii) CCR landfills may extend the timeframe to complete closure of the CCR unit multiple times, in one-year increments. For each one-year extension sought, the owner or operator must substantiate the factual circumstances demonstrating the need for the extension. No more than a total of two one-year extensions may be obtained for any CCR landfill.

**(C) Certification statement.** In order to obtain additional time extension(s) to complete closure of a CCR unit beyond the times provided by paragraph (f)(1) of this Section, the owner or operator of the CCR unit must include with the demonstration required by paragraph (f)(2)(A) of this Section the following statement signed by the owner or operator or an authorized representative: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this

demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(3) **PE certification.** Upon completion, the owner or operator of the CCR unit must obtain a certification from a qualified professional engineer verifying that closure has been completed in accordance with the closure plan specified in paragraph (b) of this Section and the requirements of this Section.

(g) **Notification of intent to close.** No later than the date the owner or operator initiates closure of a CCR unit, the owner or operator must prepare a notification of intent to close a CCR unit. The notification must include the certification by a qualified professional engineer for the design of the final cover system as required by OAC 252:517-15-7(d)(3)(iii), if applicable. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by OAC 252:517-19-1(i)(7).

(h) **Notification of closure.** Within 30 days of completion of closure of the CCR unit, the owner or operator must prepare a notification of closure of a CCR unit. The notification must include the certification by a qualified professional engineer as required by OAC 252:517-15-7(f)(3). The owner or operator has completed the notification when it has been placed in the facility's operating record as required by OAC 252:517-19-1(i)(8).

(i) **Deed notations.**

(1) Except as provided by paragraph (i)(4) of this Section, following closure of a CCR unit, the owner or operator must record a notation on the deed to the property, or some other instrument that is normally examined during title search.

(2) The notation on the deed must in perpetuity notify any potential purchaser of the property that:

(A) The land has been used as a CCR unit; and

(B) Its use is restricted under the post-closure care requirements as provided by OAC 252:517-15-9(d)(1)(iiiC).

(3) Within 30 days of recording a notation on the deed to the property, the owner or operator must prepare a notification stating that the notation has been recorded. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by OAC 252:517-19-1(i)(9).

(4) An owner or operator that closes a CCR unit in accordance with paragraph (c) of this Section is not subject to the requirements of paragraphs (i)(1) through (3) of this Section.

(j) **Recordkeeping.** The owner or operator of the CCR unit must comply with the closure recordkeeping requirements specified in OAC 252:517-19-1(i), the closure notification requirements specified in OAC 252:517-19-2(i), and the closure Internet requirements specified in OAC 252:517-19-3(i).

(k) **Criteria to retrofit existing CCR surface impoundment.**

(1) **Retrofit existing CCR surface impoundment.** To retrofit an existing CCR surface impoundment, the owner or operator must:

(A) First remove all CCR, including any contaminated soils and sediments from the CCR unit; and

(B) Comply with the requirements in OAC 252:517-11-3.

(C) A CCR surface impoundment undergoing a retrofit remains subject to all other

requirements of this Chapter, including the requirement to conduct any necessary corrective action.

**(2) Written retrofit plan.**

**(A) Content of the plan.** The owner or operator must prepare a written retrofit plan that describes the steps necessary to retrofit the CCR unit consistent with recognized and generally accepted good engineering practices. The written retrofit plan must include, at a minimum, all of the following information:

- (i) A narrative description of the specific measures that will be taken to retrofit the CCR unit in accordance with this Section.
- (ii) A description of the procedures to remove all CCR and contaminated soils and sediments from the CCR unit.
- (iii) An estimate of the maximum amount of CCR that will be removed as part of the retrofit operation.
- (iv) An estimate of the largest area of the CCR unit that will be affected by the retrofit operation.
- (v) A schedule for completing all activities necessary to satisfy the retrofit criteria in this Section, including an estimate of the year in which retrofit activities of the CCR unit will be completed.

**(B) Timeframes for preparing the initial written retrofit plan.**

- (i) No later than 60 days prior to date of initiating retrofit activities, the owner or operator must prepare an initial written retrofit plan consistent with the requirements specified in paragraph (k)(2) of this Section. For purposes of this Chapter, initiation of retrofit activities has commenced if the owner or operator has ceased placing waste in the unit and completes any of the following actions or activities:
  - (I) Taken any steps necessary to implement the written retrofit plan;
  - (II) Submitted a completed application for any required state or agency permit or permit modification; or
  - (III) Taken any steps necessary to comply with any state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the retrofit of a CCR unit.
- (ii) The owner or operator has completed the written retrofit plan when the plan, including the certification required by paragraph (k)(2)(D) of this Section, has been placed in the facility's operating record as required by OAC 252:517-19-1(j)(1).

**(C) Amendment of a written retrofit plan.**

- (i) The owner or operator may amend the initial or any subsequent written retrofit plan at any time.
- (ii) The owner or operator must amend the written retrofit plan whenever:
  - (I) There is a change in the operation of the CCR unit that would substantially affect the written retrofit plan in effect; or
  - (II) Before or after retrofit activities have commenced, unanticipated events necessitate a revision of the written retrofit plan.
- (iii) The owner or operator must amend the retrofit plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the revision of an existing written retrofit plan. If

a written retrofit plan is revised after retrofit activities have commenced for a CCR unit, the owner or operator must amend the current retrofit plan no later than 30 days following the triggering event.

(D) **PE certification.** The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the activities outlined in the written retrofit plan, including any amendment of the plan, meet the requirements of this Section.

(E) **DEQ approval required.** The owner or operator of the CCR unit must submit the written retrofit plan, and any amendment of the plan, to the DEQ for approval.

(3) **Deadline for completion.** Deadline for completion of activities related to the retrofit of a CCR unit. Any CCR surface impoundment that is being retrofitted must complete all retrofit activities within the same time frames and procedures specified for the closure of a CCR surface impoundment in OAC 252:517-15-7(f) or, where applicable, OAC 252:517-15-8.

(4) **PE certification; DEQ approval required.** Upon completion, the owner or operator must obtain a certification from a qualified professional engineer verifying that the retrofit activities have been completed in accordance with the retrofit plan specified in paragraph (k)(2) of this Section and the requirements of this Section. The certified report shall be submitted to DEQ for approval.

(5) **Notification of intent.** No later than the date the owner or operator initiates the retrofit of a CCR unit, the owner or operator must prepare a notification of intent to retrofit a CCR unit. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by OAC 252:517-19-1(j)(5).

(6) **Notification of completion.** Within 30 days of completing the retrofit activities specified in paragraph (k)(1) of this Section, the owner or operator must prepare a notification of completion of retrofit activities. The notification must include the certification by a qualified professional engineer as required by paragraph (k)(4) of this Section. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by OAC 252:517-19-1(j)(6).

(7) **Retrofit cessation.** At any time after the initiation of a CCR unit retrofit, the owner or operator may cease the retrofit and initiate closure of the CCR unit in accordance with the requirements of OAC 252:517-15-7.

(8) **Recordkeeping.** The owner or operator of the CCR unit must comply with the retrofit recordkeeping requirements specified in OAC 252:517-19-1(j), the retrofit notification requirements specified in OAC 252:517-19-2(j), and the retrofit Internet requirements specified in OAC 252:517-19-3(j).

## **SUBCHAPTER 17. COST ESTIMATES AND FINANCIAL ASSURANCE**

### **PART 3. COST ESTIMATES**

#### **252:517-17-34. Annual adjustments to cost estimates**

(a) **Adjustment required.** Except as provided in (b) and ~~(c)~~ of this Section, cost estimates for closure, post-closure, and/or corrective action shall be adjusted no later than April 9th of each year. The adjustment must be submitted to the DEQ for approval.

(1) **Recalculation of maximum costs.** The maximum costs of closure, post-closure, and/or

corrective action may be recalculated in current dollars using the procedure in Part 5 of this Subchapter (relating to determination of cost estimates).

(2) **Use of inflation factor.** If there are no significant changes to the closure or post-closure plan, corrective action plan, or facility conditions, cost estimates may be adjusted by use of an inflation factor derived from the most recent annual "Implicit Price Deflator for Gross National Product" or the "Implicit Price Deflator for Gross Domestic Product" published by the U.S. Department of Commerce in its Survey of Current Business in the year for which the adjustment is being made.

(A) The first adjustment shall be made by multiplying the approved cost estimate by the inflation factor. The result is the adjusted cost estimate.

(B) Subsequent adjustments shall be made by multiplying the latest adjusted cost estimate by the latest inflation factor.

(3) **Place in operating record.** The approved adjusted cost estimates shall be placed in the operating record.

(b) **Corporate test or guarantee as financial assurance mechanism.** When the corporate test (OAC 252:517-17-81) or guarantee (OAC 252:517-17-82) is used as the financial assurance mechanism, the cost estimates for closure, post-closure, and/or corrective action shall be adjusted no later than 90 days after the close of the corporate fiscal year.

(1) **Required information.** The financial strength information specified in OAC 252:517-17-81(c) shall be submitted to the DEQ for approval.

(2) **Extension allowed.** The DEQ may provide up to an additional 45 days to submit the information upon demonstration that 90 days is insufficient time to acquire audited financial statements.

(3) **Place in operating record.** The approved adjusted cost estimates shall be placed in the operating record.

## **SUBCHAPTER 19. RECORD KEEPING, NOTIFICATION, AND POSTING OF INFORMATION TO THE INTERNET**

### **252:517-19-1. Recordkeeping requirements**

(a) **Applicability.** Each owner or operator of a CCR unit subject to the requirements of this Chapter must maintain files of all information required by this Section in a written operating record at their facility.

(b) **Records retention.** Unless specified otherwise, each file must be retained for at least five years following the date of each occurrence, measurement, maintenance, corrective action, report, record, or study.

(c) **Recordkeeping methods.** An owner or operator of more than one CCR unit subject to the provisions of this Chapter may comply with the requirements of this Section in one recordkeeping system provided the system identifies each file by the name of each CCR unit. The files may be maintained on microfilm, on a computer, on computer disks, on a storage system accessible by a computer, on magnetic tape disks, or on microfiche.

(d) **DEQ submittal.** The owner or operator of a CCR unit must submit to the DEQ any demonstration or documentation required by this Chapter, if requested, when such information is not otherwise available on the owner or operator's publicly accessible Internet site.

(e) **Location restrictions.** The owner or operator of a CCR unit subject to this Chapter must

place the demonstrations documenting whether or not the CCR unit is in compliance with the requirements under OAC 252:517-5-1(a), OAC 252:517-5-2(a), OAC 252:517-5-3(a), OAC 252:517-5-4(a), and OAC 252:517-5-5(a), as it becomes available, in the facility's operating record.

(f) **Design criteria.** The owner or operator of a CCR unit subject to this Chapter must place the following information, as it becomes available, in the facility's operating record:

- (1) The design and construction certifications as required by OAC 252:517-11-1(e) and (f).
- (2) The documentation of liner type as required by OAC 252:517-11-2(a).
- (3) The design and construction certifications as required by OAC 252:517-11-3(c) and (d).
- (4) Documentation prepared by the owner or operator stating that the permanent identification marker was installed as required by OAC 252:517-11-4(a)(1) and OAC 252:517-11-5(a)(1).
- (5) The initial and periodic hazard potential classification assessments as required by OAC 252:517-11-4(a)(2) and OAC 252:517-11-5(a)(2).
- (6) The emergency action plan (EAP), and any amendment of the EAP, as required by OAC 252:517-11-4(a)(3) and OAC 252:517-11-5(a)(3), except that only the most recent EAP must be maintained in the facility's operating record irrespective of the time requirement specified in paragraph (b) of this Section.
- (7) Documentation prepared by the owner or operator recording the annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders as required by OAC 252:517-11-4(a)(3)(iA)(Ev) and OAC 252:517-11-5(a)(3)(iA)(Ev).
- (8) Documentation prepared by the owner or operator recording all activations of the emergency action plan as required by OAC 252:517-11-4(a)(3)(vF) and OAC 252:517-11-5(a)(3)(vF).
- (9) The history of construction, and any revisions of it, as required by OAC 252:517-11-4(c), except that these files must be maintained until the CCR unit completes closure of the unit in accordance with OAC 252:517-15-7.
- (10) The initial and periodic structural stability assessments as required by OAC 252:517-11-4(d) and OAC 252:517-11-5(d).
- (11) Documentation detailing the corrective measures taken to remedy the deficiency or release as required by OAC 252:517-11-4(d)(2) and OAC 252:517-11-5(d)(2).
- (12) The initial and periodic safety factor assessments as required by OAC 252:517-11-4(e) and OAC 252:517-11-5(e).
- (13) The design and construction plans, and any revisions of it, as required by OAC 252:517-11-5(c), except that these files must be maintained until the CCR unit completes closure of the unit in accordance with OAC 252:517-15-7.

(g) **Operating criteria.** The owner or operator of a CCR unit subject to this Chapter must place the following information, as it becomes available, in the facility's operating record:

- (1) The CCR fugitive dust control plan, and any subsequent amendment of the plan, required by OAC 252:517-13-1(b), except that only the most recent control plan must be maintained in the facility's operating record irrespective of the time requirement specified in paragraph (b) of this Section.
- (2) The annual CCR fugitive dust control report required by OAC 252:517-13-1(c).
- (3) The initial and periodic run-on and run-off control system plans as required by OAC 252:517-13-2(c).

- (4) The initial and periodic inflow design flood control system plan as required by OAC 252:517-13-3(c).
- (5) Documentation recording the results of each inspection and instrumentation monitoring by a qualified person as required by OAC 252:517-13-4(a).
- (6) The periodic inspection report as required by OAC 252:517-13-4(b)(2).
- (7) Documentation detailing the corrective measures taken to remedy the deficiency or release as required by OAC 252:517-13-4(b)(5) and OAC 252:517-13-5(b)(5).
- (8) Documentation recording the results of the weekly inspection by a qualified person as required by OAC 252:517-13-5(a).
- (9) The periodic inspection report as required by OAC 252:517-13-5(b)(2).

(h) **Groundwater monitoring and corrective action.** The owner or operator of a CCR unit subject to this Chapter must place the following information, as it becomes available, in the facility's operating record:

- (1) The annual groundwater monitoring and corrective action report as required by OAC 252:517-9-1(e).
- (2) Documentation of the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices as required by OAC 252:517-9-2(e)(1).
- (3) The groundwater monitoring system certification as required by OAC 252:517-9-2(f).
- (4) The selection of a statistical method certification as required by OAC 252:517-9-4(fg)(6).
- (5) Within 30 days of establishing an assessment monitoring program, the notification as required by OAC 252:517-9-5(e)(3).
- (6) The results of Appendices A and B to this Chapter constituent concentrations as required by OAC 252:517-9-6(d)(1).
- (7) Within 30 days of returning to a detection monitoring program, the notification as required by OAC 252:517-9-6(e).
- (8) Within 30 days of detecting one or more constituents in Appendix B to this Chapter at statistically significant levels above the groundwater protection standard, the notifications as required by OAC 252:517-9-6(g).
- (9) Within 30 days of initiating the assessment of corrective measures requirements, the notification as required by OAC 252:517-9-6(g)(5).
- (10) The completed assessment of corrective measures as required by OAC 252:517-9-7(d).
- (11) Documentation prepared by the owner or operator recording the public meeting for the corrective measures assessment as required by OAC 252:517-9-7(e).
- (12) The semiannual report describing the progress in selecting and designing the remedy and the selection of remedy report as required by OAC 252:517-9-8(a), except that the selection of remedy report must be maintained until the remedy has been completed.
- (13) Within 30 days of completing the remedy, the notification as required by OAC 252:517-9-9(e).

(i) **Closure and post-closure care.** The owner or operator of a CCR unit subject to this Chapter must place the following information, as it becomes available, in the facility's operating record:

- (1) The notification of intent to initiate closure of the CCR unit as required by OAC 252:517-15-5(c)(1).
- (2) The annual progress reports of closure implementation as required by OAC 252:517-15-5(c)(2)(iA) and (iB).



- (3) The notification of closure completion as required by OAC 252:517-15-5(c)(3).
- (4) The written closure plan, and any amendment of the plan, as required by OAC 252:517-15-7(b), except that only the most recent closure plan must be maintained in the facility's operating record irrespective of the time requirement specified in paragraph (b) of this Section.
- (5) The written demonstration(s), including the certification required by OAC 252:517-15-7(e)(2)(~~iii~~C), for a time extension for initiating closure as required by OAC 252:517-15-7(e)(2)(~~iii~~B).
- (6) The written demonstration(s), including the certification required by OAC 252:517-15-7(f)(2)(~~iii~~C), for a time extension for completing closure as required by OAC 252:517-15-7(f)(2)(~~i~~A).
- (7) The notification of intent to close a CCR unit as required by OAC 252:517-15-7(g).
- (8) The notification of completion of closure of a CCR unit as required by OAC 252:517-15-7(h).
- (9) The notification recording a notation on the deed as required by OAC 252:517-15-7(i).
- (10) The notification of intent to comply with the alternative closure requirements as required by OAC 252:517-15-8(c)(1).
- (11) The annual progress reports under the alternative closure requirements as required by OAC 252:517-15-8(c)(2).
- (12) The written post-closure plan, and any amendment of the plan, as required by OAC 252:517-15-9(d), except that only the most recent closure plan must be maintained in the facility's operating record irrespective of the time requirement specified in paragraph (b) of this Section.
- (13) The notification of completion of post-closure care period as required by OAC 252:517-15-9(e).
- (j) **Financial assurance.** The owner or operator of a CCR unit subject to this Chapter must follow the recordkeeping requirements of Subchapter 17 of this Chapter, as applicable to the facility.
- (k) **Retrofit criteria.** The owner or operator of a CCR unit subject to this Chapter must place the following information, as it becomes available, in the facility's operating record:
  - (1) The written retrofit plan, and any amendment of the plan, as required by OAC 252:517-15-7(k)(2), except that only the most recent retrofit plan must be maintained in the facility's operating record irrespective of the time requirement specified in paragraph (b) of this Section.
  - (2) The notification of intent that the retrofit activities will proceed in accordance with the alternative procedures in OAC 252:517-15-8.
  - (3) The annual progress reports required under the alternative requirements as required by OAC 252:517-15-8.
  - (4) The written demonstration(s), including the certification in OAC 252:517-15-7(f)(2)(~~iii~~C), for a time extension for completing retrofit activities as required by OAC 252:517-15-7(k)(3).
  - (5) The notification of intent to initiate retrofit of a CCR unit as required by OAC 252:517-15-7(k)(5).
  - (6) The notification of completion of retrofit activities as required by OAC 252:517-15-7(k)(6).

